

SEQUENCE LISTING

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<120> Fluorescent protein

<130> A41348A

<160> 21

<210> 1

<211> 227

<212> PRT

<213> favia fava

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Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Leu Met Glu Gly

1 5 10 15

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln

20 25 30

Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly

35 40 45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe Asp Tyr Gly

50 55 60

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys

65 70 75 80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu

85 90 96

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp

100 105 110

Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe

115 120 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro

130	135	140
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val		
145	150	155
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe		160
	165	170
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His		175
	180	185
Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn		190
	195	200
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg		205
	210	215
Leu Ala Lys		220

225

<210> 2

<211> 684

<212> DNA

<213> favia favius

<400> 2

atg agt gtg att aca tca gaa atg aag atg gag ctg ctt atg gaa ggc 48

Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Leu Met Glu Gly

1

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10

15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag 96

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln

20

25

30

cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga 144

Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly

35

40

45

cct ctt cct ttt gct ttc gat atc ctg aca aca gta ttc gat tac ggc 192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe Asp Tyr Gly
50 55 60
aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag 240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
65 70 75 80
cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa 288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
85 90 96
gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac 336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
100 105 110
ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt 384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
115 120 125
cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca 432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
130 135 140
tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt 480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145 150 155 160
aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc 528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
165 170 175
aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac 576
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
180 185 190

ttc gtg gat cat cga att gag ata aca agc cat gac aag gat tac aac 624

Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn

195

200

205

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg 672

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg

210

215

220

ctg gcc aag taa

684

Leu Ala Lys

225

<210> 3

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic DNA

<400> 3

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23

<210> 4

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic DNA

<400> 4

aactggaaga attcgcggcc gcaggaa

27

<210> 5

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic DNA

<400> 5

tgccwtttgc ittigayati ttg 23

<210> 6

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic DNA

<400> 6

gtcitcttyt gcaciacigg iccatydgva ggaaa 35

<210> 7

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic DNA

<400> 7

ggccacgcgt cgactagtac gggiigggii gggiig 36

<210> 8

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic DNA

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ttgtcaagat atcgaaagcg aacggcagag 30

<210> 9

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic DNA

<400> 9

ggccacgcgt cgactagtac 20

<210> 10

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic DNA

<400> 10

gtccaccctc tacgactttg agttccatat 30

<210> 11

<211> 44

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic DNA

<400> 11

cccggatccg atgagtgtga ttacawcaga aatgaagatg gagc 44

<210> 12

<211> 227

<212> PRT

<213> favia fava

<400> 12

Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly

1 5 10 15

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln

20 25 30

Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly

35 40 45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe His Tyr Gly

50 55 60

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys

65 70 75 80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu

85 90 95

Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp

100 105 110

Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe

115 120 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro

130 135 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val

145 150 155 160

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe

165 170 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His

180

185

190

Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn

195

200

205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg

210

215

220

Leu Ala Lys

225

<210> 13 --

<211> 684

<212> DNA

<213> favia favi

<400> 13

atg agt gtg att aca tca gaa atg aag atg gag ctg cgt atg gaa ggc 48

Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly

1

5

10

15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag 96

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln

20

25

30

cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga 144

Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly

35

40

45

cct ctt cct ttt gct ttc gat atc ctg aca aca gta ttc cat tac ggc 192

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe His Tyr Gly

50

55

60

aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag 240

Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys

65	70	75	80
cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa	288		
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu			
85	90	95	
gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac	336		
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp			
100	105	110	
ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt	384		
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe			
115	120	125	
cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca	432		
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro			
130	135	140	
tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt	480		
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val			
145	150	155	160
aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc	528		
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe			
165	170	175	
aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac	576		
Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His			
180	185	190	
ttc gtg gat cat cga att gag ata aca agc cat gac aag gat tac aac	624		
Phe Val Asp His Arg Ile Glu Ile Thr Ser His Asp Lys Asp Tyr Asn			
195	200	205	
aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg	672		
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg			

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
 145 150 155 160

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
 180 185 190

Phe Val Asp His Arg Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
 195 200 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
 210 215 220

Leu Ala Lys

225

<210> 15

<211> 684

<212> DNA

<213> favia favius

<400> 15

atg agt gtg att aca tca gaa atg aag atg gag ctg cgt atg gaa ggc 48

Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly

1 5 10 15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag 96

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln

20 25 30

cct ttc gag gga ata cag aat gtg gac ctg aca gtc ata gag ggc gga 144

Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly

35 40 45

cct ctt cct ttt gct ttc gat atc ctg aca aca gta ttc cat tac ggc 192

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Val Phe His Tyr Gly
 50 55 60
 aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag 240
 Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65 70 75 80
 cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa 288
 Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
 85 90 95
 gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac 336
 Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
 100 105 110
 ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt 384
 Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
 115 120 125
 cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca 432
 Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
 130 135 140
 tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt 480
 Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
 145 150 155 160
 aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc 528
 Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175
 aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac 576
 Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
 180 185 190
 ttc gtg gat cat cga atg gag ata aca agc cat gac aag gat tac aac 624

Phe Val Asp His Arg Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
195 200 205
aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg 672
Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
210 215 220
ctg gcc aag taa 684

Leu Ala Lys

225

<210> 16

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<212> PRT

<213> favia favius

<400> 16

Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Val Arg Met Glu Gly
1 5 10 15
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
20 25 30
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
35 40 45
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
50 55 60
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
65 70 75 80
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
85 90 95
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
100 105 110

Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe
 115 120 125

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Ser
 130 135 140

Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
 145 150 155 160

Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175

Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
 180 185 190

Phe Val Asp His Leu Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
 195 200 205

Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
 210 215 220

Leu Ala Lys

225

<210> 17

<211> 684

<212> DNA

<213> favia fava

<400> 17

atg agt gtg att aca tca gaa atg aag atc gag gtg cgt atg gaa ggc 48

Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Val Arg Met Glu Gly

1 5 10 15

gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag 96

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln

20 25 30

cct ttc gag gga ata cag aat gtg gac ctg aca gtc ata gag ggc gga 144
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly
35 40 45
cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc cat tac ggc 192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly
50 55 60
aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag 240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
65 70 75 80
cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa 288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
85 90 95
gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac 336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
100 105 110
ggc agc aac tgt ttt gtc aat gaa att cga ttt gat ggt gtg aac ttt 384
Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe
115 120 125
cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag tca 432
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Ser
130 135 140
tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt 480
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
145 150 155 160
aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc 528
Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
165 170 175

aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac 576
 Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His

180 185 190

ttc gtg gat cat cta atg gag ata aca agc cat gac aag gat tac aac 624
 Phe Val Asp His Leu Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn

195 200 205

aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg 672
 Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg

210 215 220

ctg gcc aag taa 684

Leu Ala Lys

225

<210> 18

<211> 227

<212> PRT

<213> favia favi

<400> 18

Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Leu Arg Met Glu Gly

1 5 10 15

Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln

20 25 30

Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly

35 40 45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly

50 55 60

Asn Arg Val Phe Val Glu Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys

65 70 75 80

Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu
 85 90 95
 Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
 100 105 110
 Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe
 115 120 125
 Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
 130 135 140
 Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
 145 150 155 160
 Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175
 Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
 180 185 190
 Phe Val Asp His Gln Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
 195 200 205
 Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
 210 215 220

Leu Ala Lys

225

<210> 19

<211> 684

<212> DNA

<213> favia favius

<400> 19

atg agt gtg att aca tca gaa atg aag atc gag ctg cgt atg gaa ggc 48

Met Ser Val Ile Thr Ser Glu Met Lys Ile Glu Leu Arg Met Glu Gly

1	5	10	15
gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag 96			
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln			
20	25	30	
cct ttc gag gga ata cag aat gtg gac ctg aca gtc ata gag ggc gga 144			
Pro Phe Glu Gly Ile Gln Asn Val Asp Leu Thr Val Ile Glu Gly Gly			
35	40	45	
cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc cat tac ggc 192			
Pro Leu Pro-Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe His Tyr Gly			
50	55	60	
aac cgg gta ttt gtc gaa tac cca gaa gaa ata gta gac tac ttc aag 240			
Asn Arg Val Phe Val Glu Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys			
65	70	75	80
cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa 288			
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Ser Tyr Glu			
85	90	95	
gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac 336			
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp			
100	105	110	
ggc agc aac tgt ttt gtc aat gaa att cga ttt gat ggt gtg aac ttt 384			
Gly Ser Asn Cys Phe Val Asn Glu Ile Arg Phe Asp Gly Val Asn Phe			
115	120	125	
cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca 432			
Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro			
130	135	140	
tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gta 480			
Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val			

145 150 155 160
 aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc 528
 Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe

 165 170 175
 aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac 576
 Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His

 180 185 190
 ttc gtg gat cat caa atg gag ata aca agc cat gac aag gat tac aac 624
 Phe Val Asp His Gln Met Glu Ile Thr Ser His Asp Lys Asp Tyr Asn

 195 200 205
 aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg 672
 Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg

 210 215 220
 ctg gcc aag taa 684
 Leu Ala Lys

225

<210> 20

<211> 227

<212> PRT

<213> favia favius

<400> 20

Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly

1 5 10 15
 Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln

 20 25 30
 Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly

35 40 45

Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe Gly His Gly
 50 55 60
 Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
 65 70 75 80
 Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Xaa Tyr Glu
 85 90 95
 Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
 100 105 110
 Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
 115 120 125
 Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
 130 135 140
 Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
 145 150 155 160
 Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175
 Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
 180 185 190
 Phe Val Asp Leu Arg Thr Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
 195 200 205
 Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
 210 215 220

Leu Ala Lys

225

<210> 21

<211> 684

<212> DNA

<213> favia fava

<400> 21

atg agt gtg att aca tca gaa atg aag atg gag ctg cgt atg gaa ggc 48
Met Ser Val Ile Thr Ser Glu Met Lys Met Glu Leu Arg Met Glu Gly
1 5 10 15
gct gta aac ggg cac aag ttc gtg att aca ggg aaa gga agt ggc cag 96
Ala Val Asn Gly His Lys Phe Val Ile Thr Gly Lys Gly Ser Gly Gln
20 25 30
cct ttc gag gga ata cag aat atg gac ctg aca gtc ata gag ggc gga 144
Pro Phe Glu Gly Ile Gln Asn Met Asp Leu Thr Val Ile Glu Gly Gly
35 40 45
cct ctt cct ttt gct ttc gat atc ctg aca aca gca ttc ggt cac ggc 192
Pro Leu Pro Phe Ala Phe Asp Ile Leu Thr Thr Ala Phe Gly His Gly
50 55 60
aac cgg gta ttt gtc aaa tac cca gaa gaa ata gta gac tac ttc aag 240
Asn Arg Val Phe Val Lys Tyr Pro Glu Glu Ile Val Asp Tyr Phe Lys
65 70 75 80
cag tcg ttt cct gag ggt tat tct tgg gaa cga agc atg agt tac gaa 288
Gln Ser Phe Pro Glu Gly Tyr Ser Trp Glu Arg Ser Met Xaa Tyr Glu
85 90 95
gac ggg gga att tgc ctc gcc aca aac aat ata acg atg aag aaa gac 336
Asp Gly Gly Ile Cys Leu Ala Thr Asn Asn Ile Thr Met Lys Lys Asp
100 105 110
ggc agc aac tgt ttt gtc tat gaa att cga ttt gat ggt gtg aac ttt 384
Gly Ser Asn Cys Phe Val Tyr Glu Ile Arg Phe Asp Gly Val Asn Phe
115 120 125
cct gcc aat ggt cca gtt atg cag agg aag acc gtc aaa tgg gag cca 432

Pro Ala Asn Gly Pro Val Met Gln Arg Lys Thr Val Lys Trp Glu Pro
 130 135 140
 tcc act gag aaa atg tat gtg cgt gat gga gtg ctg aag ggt gat gtt 480
 Ser Thr Glu Lys Met Tyr Val Arg Asp Gly Val Leu Lys Gly Asp Val
 145 150 155 160
 aac atg gct ctg ttg ctt caa gga ggt ggc cat tac cga tgt gac ttc 528
 Asn Met Ala Leu Leu Leu Gln Gly Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175
 aga act act tac aaa gca aag aag gtt gtc cag ttg cca gac tat cac 576
 Arg Thr Thr Tyr Lys Ala Lys Lys Val Val Gln Leu Pro Asp Tyr His
 180 185 190
 ttc gtg gat ctt cga act gag ata aca agc cat gac aag gat tac aac 624
 Phe Val Asp Leu Arg Thr Glu Ile Thr Ser His Asp Lys Asp Tyr Asn
 195 200 205
 aag gtt aag ctg tat gag cat gct aaa gct cat tcc ggg ctg cca agg 672
 Lys Val Lys Leu Tyr Glu His Ala Lys Ala His Ser Gly Leu Pro Arg
 210 215 220
 ctg gcc aag taa 684
 Leu Ala Lys
 225